REMARKS

By the present amendments, claim 52 has been limited to those embodiments wherein both of the first and second members are made of a resin ([0038], [0039], [0113] and [0114] or "plastic" [0146]) and sealed together by thermal fusion of the first and second members at 70° C to 140° C ([0114]) **after** covalently bonding a plurality of the first nucleic acid species **directly** ([0114], 5th line, at page 82 and Example 3 [0148]) to the resin defining the passages. Such embodiments are exemplified by Example 3 at [0148] – [0150], beginning at page 100. In Example 3, a cycloolefin substrate activated by aldehyde treatment and the nucleic acid covalently bonds to it through the reaction:

COP (cycloolefin polymer)-CHO + NH_2-nucleic acid ----- COP-CH=nucleic acid + H_2O

The rejection for indefiniteness has been addressed by cancellation of the word "arbitrary."

The rejection of claim 52 for obviousness over Hu in view of Wilding et al is respectfully traversed.

Claim 52, as examined, recited a sequence of steps in which "immobilizing a plurality of first nucleic acid species" followed by "then joining the first member and second member together." Neither Hu nor Wilding et al discloses such a sequence of steps. Therefore, even **if** "one of ordinary skill in the art it would have been motivated to utilize the device of Wilding with the assay format of Hu," as asserted by the Examiner at page 5 of the office action, the result would not have been the invention as claimed.

Claim 52 is now amended to further distinguish the claimed invention from the prior art by (1) limitation of its scope to a process inclusive of joining two resin members together by thermal fusion at 70° C to 140° C and (2) limitation of the immobilizing step to covalent bonding to the plurality of first nucleic acid species directly to the resin of surfaces defining the passages.

The significance of these new limitations is explained in the remarks which follow.

Antibodies, for example the anti-Hbs of Example 3, have lower thermal resistance than nucleic acids. In the present invention the nucleic acids are immobilized directly on the resin before thermal fusing at 70° C to 140° C. As noted in [0114], at temperatures below 70° C the thermal fusion will be unsatisfactory, whereas at temperatures above 140° C the nucleic acids will be inactivated. In the present invention no protein, antibody or antigen, comes into contact with the plastic (resin) members until after thermal bonding and forming of the device.

In the present invention the nucleic acids are covalently bonded **directly** to the resin. In other words, the first nucleic acids are **not** bonded to the substrate through a "spacer" (protein) such as BSA. The covalent bonding is considered to be very strong, stronger than, for example, hydrophobic bonding (see column 9, lines 31-34 of Wilding et al), which bond would be broken upon exposure to temperatures within the range of 70° C to 140° C during thermal fusion. Also, when a protein such as BSA is used as an intermediary (or "spacer") in immobilizing of a nucleic acid species, the protein would be subject to denaturation during the thermal fusion and, even if not denatured, may increase nonspecific reactions.

As the Examiner notes, Hu does not disclose or suggest use of a device as used in the claimed process. While the devices of Wilding et al might be considered similar, Wilding et al disclose nothing regarding fabrication which is of relevance to the distinctions noted above. See column 3, line 8 to column 4, line 10 of Wilding et al.

In conclusion, it is respectfully requested that the Examiner reconsider and withdraw the rejections of record in view of the present amendments and foregoing remarks.

Respectfully submitted,
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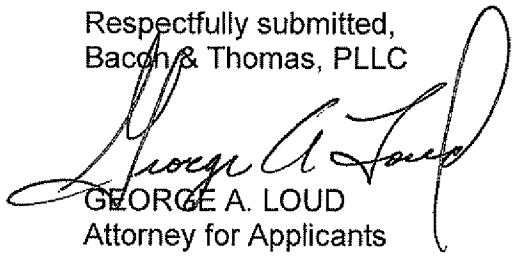

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